CLAIMS:

What is claimed is:

1. A method for coding a code division multiple access signal based on Go-CDMA codes, comprising:

5   providing majority logic coding blocks, each block comprising a Go-CDMA matrix;

        coding a data message based on the majority coding blocks; and

        transmitting the coded data message over a communication channel.

2. The method according to claim 1, wherein the majority coding blocks comprise a single

10   coding stage.

3. The method according to claim 1, wherein the majority coding blocks comprise at least two coding stages.

15   4. The method according to claim 1, wherein the majority coding blocks comprise at least three coding stages.

5. The method according to claim 1, wherein the majority coding blocks comprise more than three coding stages.

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6. The method according to claim 1, further comprising coding a plurality of data messages based on the majority coding blocks.

7. The method according to claim 6, wherein at least one of the data messages is associated with an active user.

8. The method according to claim 6, wherein at least one of the data messages is associated with a pseudo active user.

9. The method according to claim 6, wherein at least one of the data messages is associated with an inactive user.

10. The method according to claim 3, further comprising a permutation stage between each of at least one adjacent pair of the coding stages.

11. The method according to claim 4, further comprising a permutation stage between each of at least one adjacent pair of the coding stages.

12. The method according to claim 5, further comprising at least one permutation stage between each of at least adjacent pair of the coding stages.

13. The method according to claim 1, wherein the data message comprises data message elements in polar binary format.

14. The method according to claim 1, wherein the data message comprises data message elements in ternary format, or higher order formats.

15. The method according to claim 6, wherein each of the plurality of data messages is based on data received from an intermittent data source.

5 16. The method according to claim 1, wherein the majority coding logic blocks are implemented as a look up table and wherein the coding is performed based on the look up table.

17. The method according to claim 2, wherein the majority coding logic blocks are implemented as a look up table and wherein the coding is performed based on the look up table.

10 18. The method according to claim 3, wherein the majority coding logic blocks are implemented as a look up table and wherein the coding is performed based on the look up table.

19. The method according to claim 1, wherein the Go-CDMA matrices allow the introduction of at least some deterministic errors.

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20. The method according to claim 2, wherein the Go-CDMA matrices allow the introduction of at least some deterministic errors.

20 21. The method according to claim 3, wherein the Go-CDMA matrices allow the introduction of at least some deterministic errors.

22. A method for decoding a code division multiple access signal based on Go-CDMA codes, comprising:

receiving a signal over a communication channel;

providing majority logic decoding blocks, each block comprising a Go-CDMA matrix;

5   and

decoding a data message from the signal based on the majority coding blocks.

23. The method according to claim 22, wherein the majority coding blocks comprise a single decoding stage.

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24. The method according to claim 22, wherein the majority coding blocks comprise at least two decoding stages.

25. The method according to claim 22, wherein the majority coding blocks comprise at least three decoding stages.

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26. The method according to claim 22, wherein the majority coding blocks comprise more than three decoding stages.

20   27. The method according to claim 22, further comprising decoding a plurality of data messages from the signal based on the majority coding blocks.

28. The method according to claim 27, wherein at least one of the data messages is associated with an active user.

29. The method according to claim 27, wherein at least one of the data messages is associated

5   with a pseudo active user.

30. The method according to claim 27, wherein at least one of the data messages is associated with an inactive user.

10   31. The method according to claim 24, further comprising a permutation stage between each of at least one adjacent pair of the coding stages.

32. The method according to claim 25, further comprising a permutation stage between each of at least one adjacent pair of the coding stages.

15   33. The method according to claim 26, further comprising at least one permutation stage between each of at least adjacent pair of the coding stages.

34. The method according to claim 22, wherein the data message comprises data message

20   elements in polar binary format.

35. The method according to claim 22, wherein the data message comprises data message elements in ternary format, or higher order formats.

36. The method according to claim 27, wherein each of the plurality of data messages is based on data received from an intermittent data source.

5   37. The method according to claim 1, wherein the majority coding logic blocks are implemented as a look up table and wherein the coding is performed based on the look up table.

38. The method according to claim 2, wherein the majority coding logic blocks are implemented as a look up table and wherein the coding is performed based on the look up table.

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39. The method according to claim 3, wherein the majority coding logic blocks are implemented as a look up table and wherein the coding is performed based on the look up table.

40. The method according to claim 1, wherein the Go-CDMA matrices allow the introduction of

15   at least some deterministic errors.

41. The method according to claim 2, wherein the Go-CDMA matrices allow the introduction of at least some deterministic errors.

20   42. The method according to claim 3, wherein the Go-CDMA matrices allow the introduction of at least some deterministic errors.